U.S. Department of Homeland Security
Customs and Border Protection
Office of Field Operations
Biometric Program Office

Request for Information
Land Vehicle Primary Zone Traveler Photo Capture Devices
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REQUEST FOR INFORMATION

AGENCY: U.S. Department of Homeland Security, Customs and Border Protection
Office of Field Operations, Biometric Program Office

TITLE: Land Vehicle Primary Zone Traveler Photo Capture Devices
ISSUANCE DATE: 04/30/2025

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1.0 Purpose of this RFI

CBP is seeking a solution for capturing facial images of vehicle occupants in an officer-manned primary zone at an inbound vehicle point of entry (POE). CBP is requesting information from industry on a commercial solution that will do the following:

(1) Capture facial images of occupants in a privately-owned vehicle (POV) when the vehicle arrives in the primary zone area at a port of entry (POE). The capture solution can be officer-actuated or passive or a combination of both methods.
(2) Ensure facial images meet CBP's Traveler Verification Service's (TVS) photo quality threshold required for biometric comparison; and,
(3) Integrate with the current CBP's inspection application Simplified Arrival – Vehicle (SA-V)[1].

2.0 Background

The CBP mission is to secure America's border and facilitate legitimate trade and travel. Advances in technology enable CBP to meet this mission more

[1] Simplified Arrival is the enhanced arrival inspection application that uses facial biometrics to automate manual document inspection required to determine admissibility into the United States.

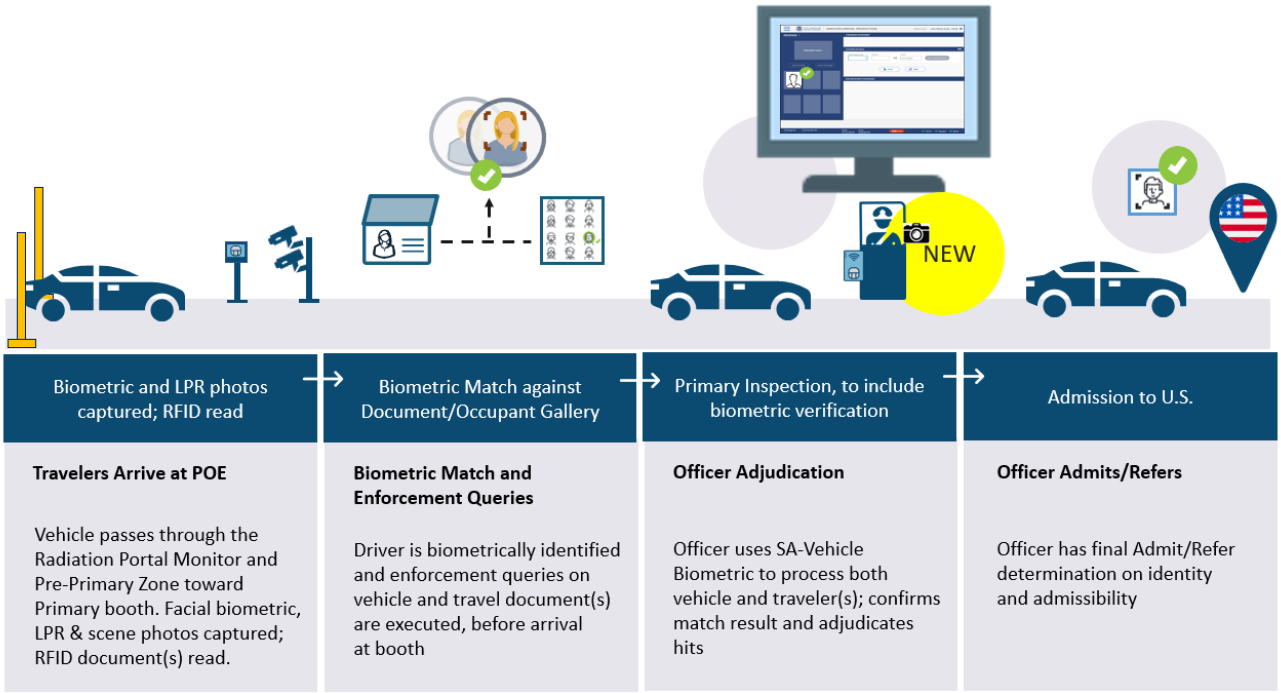
expeditiously, effectively, and securely than ever. CBP Office of Field Operations (OFO) established the Biometrics Program Office (BPO) to enhance the technological capabilities in support of the CBP mission using biometrics to verify traveler identity. The BPO programs include operational and technical efforts and activities required to provide traveler facial biometric comparison services, resulting in more complete and accurate verification of entry and exit records. CBP developed biometric matching technology, known as the Traveler Verification Service (TVS), which uses backend facial recognition technology for identity verification purposes. TVS compares photos of individuals captured at the point of encounter and matches those images to photos associated with travel documents in government holdings. TVS is currently operating in the air, sea, and land pedestrian environments and will be deployed to the land vehicle environment in the future.

Presently, when a traveler operating a privately-owned vehicle (POV) enters the United States at a land port of entry, CBP verifies the vehicle package, which includes license plate, scene photo, and biographic information. CBP is now assessing the technological feasibility of capturing the facial images of all vehicle occupants to biometrically confirm identities.

Figure 1 depicts CBP's vision for future POV biometric operations. CBP's biometric technology solution is located prior to where the vehicle approaches the primary inspection booth, passing through what is referred to as the Pre-Primary Zone (PPZ). Live encounter photo images captured in the PPZ are biometrically compared by CBP to photos in Government holdings for a match/no match response, when available and displayed to the CBP Officer (CBPO) prior to the POV reaching the primary booth.

This RFI focuses on the future of CBPs POV biometric solution: a second image capture solution located at the primary zone that will enable CBP to capture live photos of any traveler not already biometrically confirmed via images captured in the PPZ.

Figure 1: CBP's Vision for Land Port of Entry Vehicle Biometric Operations


NEW
Biometric and LPR photos captured; RFID read
Biometric Match against Document/Occupant Gallery
Primary Inspection, to include biometric verification
Admission to U.S.
Travelers Arrive at POE
Vehicle passes through the Radiation Portal Monitor and Pre-Primary Zone toward Primary booth. Facial biometric, LPR & scene photos captured; RFID document(s) read.
Biometric Match and Enforcement Queries
Driver is biometrically identified and enforcement queries on vehicle and travel document(s) are executed, before arrival at booth
Officer Adjudication
Officer uses SA-Vehicle Biometric to process both vehicle and traveler(s); confirms match result and adjudicates hits
Officer Admits/Refers
Officer has final Admit/Refer determination on identity and admissibility

The BPO is working to capitalize on existing assets and expand coverage of OFO's biometric capabilities with modern, integrated Commercial-off-the Shelf (COTS) systems that, combined with the existing process, enable facial image capture of all POV occupants. The program's primary goal is to verify traveler identity via facial recognition technology, which (1) minimizes the manual/physical exchange of documents between the traveler and CBPO, (2) allows CBPOs to focus on core law enforcement and other inspection activities, (3) improves port security and thereby national security, (4) confirms traveler crossing history, (5) collects a more comprehensive profile of the "true" identity of a traveler, and, (6) improves traveler experience without increasing processing times.

To improve identity verification, in recent years, the BPO has executed a limited number of integrated technology demonstrations that use the TVS biometric matching capability to match the facial image captured in the PPZ. These tech demos have confirmed that, although photo capture in the PPZ has improved, there are constraints that impact the ability to capture 100% of passengers. Human behavior, multiple passenger vehicle rows, and environmental obstacles all present challenges unique to the vehicle environment. Therefore, CBP seeks to augment the passenger images captured in the PPZ with a system-integrated camera located at or near the primary zone.

3.0 CBP Image Capture Goals and Objectives

Listed below are CBP's overall goals and objectives for a biometric solution in the POV environment.

This RFI pertains to goals #3 and #4.

(1) Capture photos of all vehicle occupants and compare these photo(s) to the travel document source photo(s) on file in Government holdings. Travelers whose photos are not captured in the PPZ, will have their photos captured in the primary zone.

(2) In the vehicle environment, CBP conducts 1: few[2] facial comparison of the live photos captured in the PPZ to the source photo(s) associated with the travel document(s) read in the PPZ.

(3) The primary officer scans documents missed by the RFID reader in the lane, and while prioritizing officer safety and considering ease-of use, the objective is to capture live photos of any vehicle occupants missed in the PPZ. Photo capture may be officer-actuated, passive and/or both.

(4) CBP uses TVS to conduct a 1:1 facial comparison of the live photos captured in the primary zone to the source photo from the travel document presented.

(5) CBP provides automated notification of biometric match to the CBPO for use in admissibility decision.

(6) Biometrically confirmed entries into the United States are added to the traveler's crossing record.

Vendors are requested to address the objectives listed below, in their RFI response:

System	CBP Objectives	So that CBP	Additional Information
Image Capture	a. Add active (mobile) and/or static (e.g., fixed to the booth) capture of live images of all vehicle occupants at the primary zone (i.e., all passengers in front and rear seats)	Can use the live image photo for biometric matching and identity verification	The objective is to capture facial images of 100% of vehicle passengers. Though it is likely that all front seat passengers will be captured in the PPZ, and many of the missed travelers are in rows two (2) & three (3), this is not always the case—all vehicle occupants may be

[2] If there is more than one traveler in the vehicle, multiple documents can be read in the lane and multiple source photos may be available for comparison; each document photo has a match attempt with all captured live photos, thus, a 1: few comparison.

System	CBP Objectives	So that CBP	Additional Information
			missed in the lane.
	b. Passive (automatic) or officer-actuated live photo capture	Can assess how the solution impacts officer operations.	Vendor to provide details.
	c. Know if the solution can be physically attached to an officer	Can assess how the solution impacts officer operations.	Vendor to provide details.
	d. Provide feedback to the officer so they know if a quality photo was captured.	Can minimize the burden on the officer	May be a display or audible signal
	e. Accommodate non-standard field of view	Can capture facial images of occupants traveling in varying vehicle sizes (e.g., standard sedan, mid-size SUV, pickup truck)	Variable Field of View (FoV) from whole vehicle length (3 seat row distance > 8ft) to an individual face width. Resolution should be high enough to meet facial identification pixel density requirement (250 pixels per meter / 75 pixels per foot). Need description of field of view capabilities
	f. Obtain image quality sufficient for biometric confirmation	Can biometrically confirm travelers' identities by comparing encounter (live photo) to photo in government holdings	Photo image must meet the basic TVS standards for biometric matching (see Appendix A)
	g. Capture images through the	Can capture facial images from the	Capture 100% of vehicle

System	CBP Objectives	So that CBP	Additional Information
	windshield or windows of a stationary vehicle	primary zone	passengers
	h. Capture images in daytime or nighttime with equal photo quality and speed	Can provide the officer with a reliable technology	Vendor to provide details
	i. Know image capture device specifications	Can determine whether the image capture device can be integrated with CBP systems	Vendor to provide details
	j. If a passive solution, know if the capture device is capable of remote adjustment, directional, and zoom control (i.e., ability to pan/tilt/zoom)	Can determine whether the image device can be operated/adjusted remotely	List the capture devices' ability for remote adjustment to correct for image clarity and the ability of the capture device to be positioned remotely
	k. Know the hardware/software requirements for the image capture device to understand whether the capture device is software/ hardware agnostic and/capable to integrate into the current lane equipment is ready to use.	Can determine whether the capture device can be integrated with CBP systems	Vendor to provide details
	l. Know the device's country of origin. Ensure the	Support compliance with all statues and regulations	Compliance with all statues, regulation,

System	CBP Objectives	So that CBP	Additional Information
	image capture equipment is not manufactured by, or has parts that have been manufactured by, any company that is banned by statute or regulation from being purchased by a Federal Government agency or is suspended or debarred from Federal contracts	regarding the manufacturing of equipment or parts of equipment	including Section 889 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 and SAM. This includes video surveillance and telecommunications equipment produced by: • ZTE • Hytera Communications Corporation • Hangzhou Hikvision Digital Technology Company • Dahua Technology Company (or any subsidiary or affiliate of such entities), whom the Federal Government is banned for using for national security reasons.
Technical Attributes	a. How images are captured (still, streaming, etc.)	Can assess image capture capability	Vendor to provide details
	b. Know if the device has on-board image storage or allows access to collected images[3]	Complies with procedures for capturing and retaining photos of United States Citizens	No images should be stored on the device and no access to images allowed, other than by CBP. See Appendix C

System	CBP Objectives	So that CBP	Additional Information
	c. Know if the device(s) is Blue Tooth or WiFi enabled	Can consider usability and adaptability to various locations	Solution should be able to operate at all POV ports of entry. Vendor to provide details
	d. Capture multiple unique images	Can biometrically confirm one (1) or more occupants with only one (1) photo.	Device may capture unique facial images of multiple occupants, in one photo. Vendor to provide details
	e. Select best quality images from all images captured	Receives the best quality photo for biometric confirmation	Vendor to provide details
	f. Eliminate duplicate images	Ensures unique images are sent to CBP	Solution determines the best quality image of unique individuals without sending duplicate images of the same vehicle occupant
	g. Integrate capture solution with existing CBP systems	Determine whether the capability can integrate with CBP systems	Capture solution interfaces with CBP systems and must be able to send newly captured images to the existing encounter package See Appendix B for

[3] Department of Homeland Security/U.S. Customs and Border Protection Privacy Impact Assessment – 056 Traveler Verification Service; https://www.dhs.gov/privacy-impact-assessments

System	CBP Objectives	So that CBP	Additional Information
			integration requirements
	h. Know the rate of photo transmission	Can determine whether the photo transmit occurs within 500 milliseconds to 1000 milliseconds when the vehicle reaches the primary zone	Vendor to provide details
	i. Know the power and bandwidth requirements for image capture device	Can determine sufficient power, bandwidth, network infrastructure, etc., to support the solution	Vendor to provide details
	j. Have a list of image data format(s)	Can determine if the data format(s) used to transfer information is compatible with CBP systems	List image data formats, for example, .jpeg, .gif, etc.
	k. Have a list of specific technological considerations	Can determine if there are any other specific technological considerations for the solution to integrate with CBP systems	Vendor to provide details
	l. Know the battery life of the device, if applicable	Can determine operational usability	Solution should have a shift-length battery life to be functional 24/7
	m. Have a list of optional products that would enhance image capture of vehicle occupants in the lane	Can determine if there is software or hardware that will need to be developed or procured to enhance vehicle occupant capture rates	For example, hardware or software that provides additional illumination, filtering, or other image enhancement

System	CBP Objectives	So that CBP	Additional Information
			capabilities
	n. Ensure that the image capture device meets established CBP security requirements, directives, and guidelines	Can determine if the vendor solution is appropriate for CBP use	See Appendix C for CBP security requirements
	o. Know how maintainable and commercially available the primary zone technology is	Can determine operational usability	
Environmental / Human Factors	p. Know if the device is ruggedized to withstand elemental conditions	Could the device operate the image capture in conditions including extreme heat (> 50° C), cold (< -30° C) degrees cold/ice, desert-like conditions (sand/dust), sun glare, cloud cover, etc.	Vendor to provide details: -Solution should be functional 24/7, in all weather conditions (Operation temperature: -30° C ~ 50° C), and weather-proof (better than IP66). Inclement weather conditions may include, but are not limited to: heavy rain, snow, dust storms, etc. -Solution should be able to capture images in all light conditions and possess low light sensitivity (B/W, <=0.01 lux)

System	CBP Objectives	So that CBP	Additional Information
			-Portable cameras should have capability to defog during harsh weather conditions with > 30 C temperature difference between inside and outside booth.
	q. Know the form factor of the camera device(s)	Can determine operational usability/safety	Solution size must be small enough as to not block officer's view and officer's mobility is not impeded by solution.
	r. Know the solution's ease-of-use	Can determine operational usability for the officer	Officer safety and ease-of-use are paramount
	s. Know if the device(s) has flexible mounting options	Can determine operational usability and mounting requirements	
	t. Know if facial images can be captured without vehicle occupants looking directly at the image capture solution	Can capture images: • When vehicle occupants look down/away, are asleep, etc. • Despite occlusions such as masks, visors, hats, sunglasses, vehicle T-bar, stickers, cell phone mounts, dirty	Demonstrate the image capture devices' ability to capture partial or incomplete facial images that can be used for accurate biometric matching

System	CBP Objectives	So that CBP	Additional Information
		windshields, or other obstructions • By adjusting for sun glare and cloud cover • Of live occupants, filtering for non-human passengers (i.e., graphics on a t-shirt, animals)	
	u. Know what type of artificial lighting will be used, if any	Can assess whether the artificial lighting poses a hazard to officer/passengers	Vendor to provide details

(1) Describe the **image capture** identified in sections (a) – (i). Please describe each topic separately.
(2) Describe the **technical attribute(s)** identified in (a) – (l). Please describe each topic separately.
(3) Describe the **environmental/human factors** identified in (a) – (c). Please describe each topic separately.
(4) Describe your development approach and any key limitations:
    a. Is your facial image capture process image-type dependent (jpg, gif, etc.).
    b. Are there technical dependencies with your image capture solution?
    c. Are there any technical incompatibilities, particularly with industry accepted technologies (e.g., Windows versus Linux, Java, .net)? If so, please explain.
(5) Have your products been fielded?
    a. If so, what were the operational settings?
    b. What is the average volume handled by your solution, in terms of numbers of images processed daily and size of the average image?
    c. What is the Technical Readiness Level?
    d. What are the performance results?
(6) How can industry help to standardize and leverage technology/software solutions for use across various POE environments to minimize incompatibilities across systems, reduce development time/cost and

maximize interoperability with future systems?

(7) Address the solution capabilities to improve operational throughput by means of remote officer inspection/reduced officer intervention, e.g., enhanced automation and optimized processing time.

4.0 RFI Response Instructions

Only electronic submissions will be accepted. Electronic files larger than 10 MB shall be broken down into multiple files with no one file exceeding 10 MB. Each electronic submission shall include:

(1) The RFI title in the subject line

(2) The maximum number of pages per submission shall be limited to 15 pages excluding title page, table of contents, company information page and reference materials, if attached.

(3) All content should be provided in Microsoft Word or PDF format.

(4) The company information page shall include the following information:

- Company Name
- Socio-economic status
- DUNS # and CAGE code
- Point-of-Contact information for technical questions
- Point-of-Contact information for contractual questions
- Federal Contract(s) available for use

(5) The file number and total files being submitted (e.g., File 1 of 4, File 2 of 4, etc.) in the subject line, if submission includes more than one electronic email.

This notice is part of government market research, a continuous process for obtaining the latest information on the commercial status of the industry. This RFI is for planning purposes, and does not constitute a commitment, implied or otherwise, that a procurement action will follow.
CBP will use the information submitted in response to this notice at its discretion and will not provide comments to any submission; however, CBP reserves the right to contact any respondent to this notice for the sole purpose of enhancing CBP's understanding of the notice submission. The content of any responses to this notice may be reflected in any subsequent solicitation.

In accordance with FAR 15.202€, responses to this notice are not offers and cannot be accepted by the Government to form a binding contract. Responders are solely responsible for all expenses associated with any voluntary response to this RFI, including any subsequent product demonstrations.
Questions on this RFI must be sent via email to the following:

Contracting Officer: Claire Hamilton claire.a.hamilton@cbp.dhs.gov.
Delivery POC: Jeffery Walker jeffery.t.walker@cbp.dhs.gov

Include the RFI title in the subject line of your email when submitting responses.

Responses to this RFI shall be sent via email to the delivery POC Jeffery Walker at jeffery.t.walker@cbp.dhs.gov by 2 PM ET COB May 30, 2025.

Appendix A: Additional Information for Image Quality Specifications

CBP's Traveler Verification Service relies on image quality standards for successful matching. Photos must have reasonable compliance with the ANSI/NIST ITL 1-2011 Type 10 standards and subject acquisition profile levels 10-20 for frontal images. The only allowable departure from the standard's requirements is the presence of mild pose variations around frontal.

Current photo standards required for TVS matching:

1. A JPEG or JPEG 2000 file of no more than 150 KB
2. Minimum resolution of 480 pixels by 760 pixels
3. A distance of at least 80 PX between the eyes
4. Eye roll of no more than 30 degrees
5. A front-facing photograph with:
    a. Tilt, no more than +/- 5%
    b. Roll, no more than +/- 15%
    c. Pan, no more than +/- 15%
6. Uniform Illumination
    a. Exposure
        i. The average of 8-bit RGB components within each area shall fall between 105 and 125 with a standard deviation of ± 10. Furthermore, for every area examined, the maximum difference between the means of any two of the RGB components shall not exceed 10.
        ii. By examining the histogram of the image, the RGB code value for a minimum of six gray patches should fall within range from 0.5 to 1.5 neutral density.
    b. Saturation
        i. For each patch of skin on the person's face, the gradations in texture shall be clearly visible. There shall be no saturation (over or under exposure) on the face.
        ii. The Δ E 1976 of each color for the sRGB color space is to be less than 10 with CIELab values.
7. Minimal Noise
    a. Peak Signal to Noise Ratio must be greater than or equal to 53 dB.
8. Minimal Blur
    a. Photos with defocus blur approximating Gaussian blur must have a radius of less than 4 sigma.
    b. Photos with motion blur must have a measured displacement of less than 9 pixels.

Appendix B: CBP Primary Zone Integration Guidelines

The image capture system should adhere to the following guidelines to be seamlessly integrated with the lane equipment. Ideally:

1. The capture system will provide HTTP(S) endpoints so that the lane equipment can send signals to start and stop capturing occupant faces.
2. The capture system should receive and send data messages as per the Interface Control Document. This document will be provided when applicable.
3. The capture system should not exceed 6 amps.
4. The capture system will have a fixed IP address and connected to the lane equipment via ethernet network connection.
5. The capture system will be connected to the private network and will not have Internet access.
6. The capture system's cameras could be mounted on standard equipment bollards or other existing infrastructure.

Appendix C: CBP Security Guidelines

Systems for image capture are to be compliant with CBP's Security and Privacy Policies and Guidelines.

1. Vulnerability scans will be conducted, and non-compliant issues must be resolved by the vendor.
2. Operating System must be Software Technical Implementation Guide (STIG) compliant.
3. Physical network connections must be secure.
4. Data at rest must be encrypted.
5. Personally Identifiable Information (PII) data cannot be stored on the image capture system.
6. PII data cannot be transferred off CBP network.
7. The image capture system will require a Security Authorization from CBP's Cyber Security department.
8. Equipment must comply with regulatory prohibitions for certain services or equipment.
9. All equipment that is going on the CBP Network must be approved by and entered into the CBP Technical Reference Model (TRM).